

WE CLAIM:

- [C1]** A method for increasing *Agrobacterium* transformation frequencies in a host plant, said method comprising:
- a. increasing histone levels in the host plant compared to normal levels of histone in the host plant; and
  - b. transforming the host plant with *Agrobacterium*.
- [C2]** The method of claim 1, wherein the histone is an H2A histone.
- [C3]** The method of claim 2 wherein the H2A histone is encoded by *Arabidopsis RAT5*.
- [C4]** The method of claim 1 wherein transformation frequencies are measured by the number of tumors produced in the host plant.
- [C5]** The method of claim 2, wherein the H2A histone is H2A-1.
- [C6]** A plant cell with an overexpression of plant histones sufficient to increase efficiency of transformation of the plant cell by *Agrobacterium*.
- [C7]** The plant cell of claim 6 wherein the plant histones are of the H2A histone family.
- [C8]** The plant cell of claim 7 wherein an H2A histone is encoded by *Arabidopsis RAT5*.
- [C9]** A method of increasing *Agrobacterium* transformation frequencies in a host plant, the method comprising:
- (a) introducing at least one copy of a polynucleotide sequence encoding a plant histone protein to the host plant;
  - (b) selecting a host plant expressing the polynucleotide sequence encoding a plant histone protein; and
  - (c) transforming the host plant expressing the polynucleotide sequence encoding a plant histone protein with a DNA molecule of interest using *Agrobacterium*.
- [C10]** The method of claim 9, wherein the host plant is a monocot plant.
- [C11]** The method of claim 10, wherein the monocot plant is maize.
- [C12]** The method of claim 9, wherein the polynucleotide sequence encoding a plant histone protein is a member of an H2A gene family of *Arabidopsis*.
- [C13]** The method of claim 12, wherein the member of the H2A gene family of *Arabidopsis* is *RAT5*.
- [C14]** The method of claim 10 further comprising adding L-cysteine to media used in cultivating the host plant.
- [C15]** A transgenic plant comprising at least one additional copy of a polynucleotide sequence encoding a plant histone H2A protein.

- [C16]** A method for increasing stable *Agrobacterium* transformation efficiency in monocot host plants, the method comprising:
- (a) selecting a host plant expressing a polynucleotide sequence encoding a plant histone H2A protein;
  - (b) infecting the host plant with a DNA molecule of interest by infection with an *Agrobacterium* strain;
  - (c) providing at least one antioxidant in a cocultivation medium;
  - (d) selecting the infected cells for transformants expressing the DNA molecule of interest.
- [C17]** The method of claim 16, wherein the monocot plant is maize.
- [C18]** The method of claim 16, wherein the antioxidant is L-cysteine.
- [C19]** The method of claim 18, wherein the L-cysteine is at a concentration about between 100 mg/L and 400 mg/L of cocultivation media.
- [C20]** The method of claim 16, wherein the infecting of the host plant in the cocultivation medium is for about 3 days.
- [C21]** The method of claim 16 wherein the host plant is an embryo.
- [C22]** A genetic construct comprising at least one copy of a histone gene that when expressed is capable of increasing transformation frequencies in a host plant.
- [C23]** The genetic construct of claim 22, wherein the histone gene is H2A.
- [C24]** A host cell transformed by at least one copy of a gene involved in T-cell integration wherein the gene is capable of effecting overexpression of histone to enhance plant transformation frequencies.
- [C25]** The host cell of claim 24, wherein the gene is the *RAT5* gene of *Arabidopsis*.